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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,447	11/27/2001	Stephen Francis Bush	14875	9513

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EXAMINER
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FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/994,447

**Applicant(s)**

BUSH, STEPHEN FRANCIS

**Examiner**

Fred Ferris

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/27/01</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. Claims 1-8 have been presented for examination based on applicants disclosure filed 27 November 2001. Claims 1-8 have been rejected by the examiner.

### Specification

2. The attempt to incorporate subject matter into this application by reference to "Schatten, A., Genetic Algorithm Short Tutorial" is ineffective because it contains an embedded hyperlink referencing "http://www.ifs.tuwien.ac.at/" (see below).

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. MPEP § 608.01 recites the following:

*"VII. < Hyperlinks and Other Forms of Browser-Executable Code in the Specification*

*Examiners must review patent applications to make certain that hyperlinks and other forms of browser-executable code, especially commercial site URLs, are not included in a patent application. Examples of a hyperlink or a browser-executable code are a URL placed between these symbols "< >" and http:// followed by a URL address. When a patent application with embedded hyperlinks and/or other forms of browser-executable code issues as a patent (or is published as a patent application publication) and the patent document is placed on the USPTO web page, when the patent document is retrieved and viewed via a web browser, the URL is interpreted as a valid HTML code and it becomes a live web link. When a user clicks on the link with a mouse, the user will be transferred to another web page identified by the URL, if it exists, which could be a commercial web site. USPTO policy does not permit the USPTO to link to any commercial sites since the USPTO exercises no control over the organization, views or accuracy of the information contained on these outside sites.*

*If hyperlinks and/or other forms of browser-executable code are embedded in the text of the patent application, examiners should object to the specification and indicate to applicants that the embedded hyperlinks and/or other forms of browser-executable code are impermissible and require deletion. This requirement does not apply to electronic documents listed on forms PTO-892 and \*>PTO/SB/08< where the electronic document is identified by reference to a URL.*

*The attempt to incorporate subject matter into the patent application by reference to a hyperlink and/or other forms of browser-executable code is considered to be an improper incorporation by reference."*

### **Drawings**

3. *Applicant's drawings submitted on 27 November 2001 have been approved by the examiner.*

### **Claim Rejections - 35 USC § 101**

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. ***Claims 1-8 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter.***

Per independent claims 1 and 14: The Examiner submits that method claims 1 and 8, as written, are merely drawn to a mental process for optimizing a command sequence and tracking a UAV, since the language of the claims can be interpreted as meaning the method is carried out by a mental process augmented (calculated) using pencil and paper. (i.e. not a machine or computer process)

**MPEP 2111 [R-1]** recites the following:

**"2111 [R-1] Claim Interpretation; Broadest Reasonable Interpretation  
CLAIMS MUST BE GIVEN THEIR BROADEST REASONABLE  
INTERPRETATION**

During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).< Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (Claim 9 was directed to a process of analyzing data generated by mass spectrographic analysis of a gas. The process comprised selecting the data to be analyzed by subjecting the data to a mathematical manipulation. The examiner made rejections under **35 U.S.C. 101** and 102. In the 35 U.S.C. 102 rejection, the examiner

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*explained that the claim was anticipated by a mental process augmented by pencil and paper markings. The court agreed that the claim was not limited to using a machine to carry out the process since the claim did not explicitly set forth the machine. The court explained that "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from reading limitations of the specification into a claim, to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.). See also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification.")"*

*The Examiner further submits that, in view of the language of the claims, Applicant's have merely claimed a manipulation of abstract ideas by a mental process and have not specifically set forth a machine or computer process.*

*Section 2106 [R-2] (Patentable Subject Matter — Computer-Related Inventions) of the MPEP recites the following:*

*"In practical terms, claims define nonstatutory processes if they:*  
*– consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or*  
*– simply manipulate abstract ideas, e.g., a bid (*Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (*Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759), without some claimed practical application."*

*In this case, independent claims 1 and 8 are simply drawn to the manipulation of abstract ideas by a mental process of steps for optimizing a command sequence and tracking a UAV. Dependent claims 2-7 inherit the defects of the claims from which they depend.*

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

***5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,122,572 issue to Yavnai in view of "An Architecture for Modeling Uninhabited Aerial Vehicles", Draper et al, IEEE 0-7803-5731-0/99, IEEE 1999.***

*Independent claim 1, for example, is drawn to:*

*Optimizing UAV command sequence by:*

- simulating performance of UAV command sequence in simulated environment;*
- modifying command sequence mission;*
- simulating performance of modified command sequence by UAV in simulated environment, resulting in new mission outcome;*
- repeating to optimize the simulated mission outcome;*
- selecting sequences based in upon which command sequences produce optimal outcome;*
- encoding each selected command sequence into algorithmic active packet.*

*Regarding independent claims 1 and 8: Yavnai teaches a system and method for the optimization (CL24-L17-67) of a command sequence for a UAV (CL22-30-67)*



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*operating in a simulated environment (CL25-L9-29, Fig. 13). Yavnai further discloses modifying a mission command sequence (CL23-L29-67) and simulating the performance of the modified (new) command sequence and resulting simulated mission. (CL23-L53-61, Figs. 2-6) Yavnai also discloses selecting command sequences (CL6-45-67) that provide an optimal outcome (i.e. optimizing the command sequences) and following a mission plan and commanding photographs (airphotos, CL23-L1-4, Fig 4).*

*Yavnai does not explicitly disclose encoding the selected (optimized) command sequence into an algorithmic active packet.*

*Draper teaches an architecture for modeling (simulating) UAV command control that includes communication of the command sequence and course information between a host (operator computer) and the UAV (Section 2, page 747, para: 2, page 746, col. 2, para: 1) (obviously, the communication includes "active" packets) That is, Draper specifically teaches that it is well known to use standard communications links and protocols (i.e. packets) in communication commands to UAV's. Applicant's specification defines an algorithmic active packet as a compressed file containing a data portion for commanding photographs, and an algorithmic portion containing UAV course information for uploading to the UAV. (page 11, 0025) Applicants have admitted that the compression aspect of the active packet uses any well-known data compression algorithm (page 11, 0024). Yavnai discloses following a mission plan and commanding photographs (airphotos, CL23-L1-4, Fig 4) as noted above.*

*It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of Yavnai relating to optimization of a command sequence for a UAV operating in a simulated environment, with the teachings of Draper relating to communication of the command sequence and course information between a host and the UAV, to realize the elements of the claimed invention. An obvious motivation exists since, in this case, the Yavnai reference teaches to the Draper reference, and the Draper reference teaches to the Yavnai reference. Specifically, both Yavnai and Draper teach UAV mission planning and command optimization and are used in the same technological arena as noted above. Yavnai teaches to Draper because Yavnai teaches techniques optimizing UAV command sequences (See: Yavnai, Summary of Invention). Draper teaches to Yavnai because Draper specifically teaches communicating the command sequences using standard communications links and protocols (i.e. packets). (See: Draper: Abstract) Further, the level of skill required by an artisan to realize the claimed limitations of the present invention is clearly established by both references. (See: Yavnai/Draper, Background/Abstract) Accordingly, a skilled artisan having access to the teachings of Yavnai and Draper, would have knowingly modified the teachings of Yavnai with the teachings of Draper (or visa versa) to realize the claimed elements of the present invention while reducing the cost and development time.*

*Per dependent claims 2 and 3:* *Yavnai discloses the use of genetic algorithms and neural network techniques in developing UAV command sequences (CL25-L1-8) and mission objectives (CL7-L39).*



Per dependent claims 4, 5 and 7: Applicants have admitted that the compression techniques applied to the active packet use well-known data compression algorithms (page 11, 0024).

Per dependent claim 6: Representing the commands as an algorithm supplemented by data is rendered obvious by the combination of Yavnai and Draper using the reasoning previously set forth above. That is, Draper specifically teaches that it is well known to use standard communications links and protocols (i.e. packets) in communication commands to UAV's that contain command sequences and course (algorithm) information. (Section 2, page 747, para: 2, page 746, col. 2, para: 1)

### **Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Simulation as s Mission and Rehearsal Tool", W. M. Garrabrants, Proceedings 1998 Winter Simulation Conference, ACM 1998.

U.S. Patent 6,056,237 issued to Woodland teaches a UAV system and command simulation.

U.S. Patent Application 2005/0119828 issued to Lahn teaches UAV mission planning and mapping.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778

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*and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached at 571-272-3780. The Official Fax Number is: (703) 872-9306*

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June 22, 2005

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